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DISAPPROVAL OF REVISED OU#3 RI/FS WORK PLAN ADDENDUM

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
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FEB 17 1993

REPLY TO THE ATTENTION OF:

HRE-8J

Mr. Jack R. Craig
United States Department of Energy
Feed Materials Production Center
P.O. Box 398705
Cincinnati, Ohio 45239-8705

RE: Disapproval of Revised OU #3
RI/FS Work Plan Addendum

Dear Mr. Craig:

On July 29, 1992, the United States Environmental Protection Agency (U.S. EPA) disapproved the Operable Unit (OU) #3 Remedial Investigation (RI) and Feasibility Study (FS) Work Plan Addendum. Due to the nature of U.S. EPA's comments, several meetings were held between U.S. EPA, the United States Department of Energy (U.S. DOE), and the Ohio Environmental Protection Agency. Also several interim submittals were developed by U.S. DOE to determine the appropriate action for revising the Work Plan.

On December 18, 1992, U.S. DOE submitted a revised OU #3 RI/FS Work Plan Addendum. Although U.S EPA finds the Work Plan to be significantly improved from the July 29, 1992, submittal, there are still omissions and discrepancies which must be addressed. Therefore, U.S. EPA disapproves the revised OU #3 RI/FS Work Plan Addendum pending incorporation of the attached comments.

Please contact me at (312) 886-0992 if you have any questions.

Sincerely,

James A. Saric
Remedial Project Manager

cc: Graham Mitchell, OEPA-SWDO
Pat Whitfield, U.S. DOE-HDQ
Nick Kaufman, FERMCO
Jim Thiesing, FERMCO
Paul Clay, FERMCO

(rj jantke)
partial
action
response
to doe-0661-93
(5629)

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bcc w/o attachments:
William Muno->Norm Niedergang->Kevin Pierard, WMD
Brian Barwick, ORC
Cheryl Allen, OPA

bcc w/attachments:
Gene Jablonowski, ARD
Jean Michaels, PRC

GENERAL COMMENTS ON THE OPERABLE UNIT (OU) 3 REMEDIAL INVESTIGATION (RI) WORK PLAN

1. The discussion in Section 2.3.5 should be updated to reflect the current Department of Energy (DOE) understanding of the geology and hydrogeology of the glacial overburden.

2. Section 2.4.3.1 indicates that considerable discrepancies exist between the radiological survey data collected before 1992 and the data collected during 1992. For example, the pre-1992 data indicated that average total surface contamination in the Rust Engineering Building was 12,000 disintegrations per minute (dpm) per 100 square centimeters (cm^2). However, the 1992 data showed values of less than 5,000 dpm per 100 cm^2. The reasons for such significant discrepancies in the radiological survey data, where present, should be explained. Also, DOE should clearly explain how the various radiological survey data, including data not yet collected, will be used to classify components. The U.S. Environmental Protection Agency (EPA) strongly recommends that all components be classified based on the highest radiological survey data.

3. Surface contamination is referred to as "total surface contamination," "total in-place activity," and "total residual contamination," among other terms. The discussion should explain whether these terms apply to fixed (nonremovable) contamination or to total (fixed plus removable) contamination. If DOE means fixed contamination, then total surface contamination, total in-place activity, and total residual contamination should be referred to as fixed surface contamination only. This correction should be made throughout the work plan.

4. Numerous discrepancies exist between the RI work plan text and the component-specific sampling plans (CSSP) presented in Section D.9. For instance, Table 2.6 states that the Plant 1 Storage Shelter (Component 1B) was classified based on 1992 data; however, Page D.9-49 states that no 1992 radiological data exist for this component. Additionally, Components 6.B and 60 are discussed in the CSSP but are not listed in Table 2.6. Information presented in the work plan should be checked for accuracy against information provided in the CSSPs.

5. The objectives presented in the work plan are general and, in some instances, contradictory. For example, one of the objectives listed on Page 1-4 is to "characterize radiological and chemical contamination in OU 3 as necessary to allow evaluation of remedial action alternatives." The phrase "as necessary" needs further explanation. In addition, one of the objectives presented on Page D.3-1 is to "collect data needed to support fundamental decision making with regard to the management and future disposition of OU 3 in both the short and long term." In meetings between EPA and DOE, DOE has maintained that the amount of data needed to estimate the minimum and maximum volume of material (as is required to evaluate alternatives) is significantly less than that needed to determine the management and disposition of the waste during the remedial action. DOE should present clearly defined, specific objections in a consistent manner.

6. Critical sample-specific handling criteria have not been included or referenced. For example, requirements for sample volume, sample containerization, sample presentation, sample holding times, quality control sampling frequency (by analytical method), and sample chain-of-custody should be referenced to the Site-Wide Characterization Quality

Assurance Project Plan (SCQ) or summarized in the RI work plan.

7. The RI work plan should indicate how and at what stage of the RI removal action (RA) candidates will be identified. Furthermore, the existing reporting and notification process should be referenced in the RI work plan.

8. The sampling and analysis plan (SAP) still uses terms throughout such as "reasonable," "where appropriate," "when possible," and so on. Nonspecific phrases do not provide EPA with sufficient information to approve the RI work plan. Although it is anticipated that some flexibility must be retained in the sampling program, a definite plan must be presented.

9. Several sampling and analytical procedures are either incomplete or yet to be submitted. DOE should present a specific schedule of procedure completion and submittal for incorporation in the SCQ.

10. X-ray fluorescence is a very matrix-dependent field analytical technique that requires extensive calibration. The SAP should show how the technique's limitations will be addressed.

11. The review of existing data should present the data quality levels (DQL) for the existing data and should discuss the effect these DQLs have on screening of components.

12. The number assigned to each type of sampling protocol does not match the one listed in Table D.12. This discrepancy should be reconciled.

13. It is still unclear when continuous and noncontinuous high-volume air sampling will be used. DOE should clarify this sampling approach.

SPECIFIC COMMENTS ON THE OU 3 WORK PLAN

1. **Section 1.2, Page 1-4, Paragraph 0, Second Bullet.** This bulleted item states that one of the general objectives of the RI is to "assess potential risk to human health and the environment that could result for exposure to contaminants for baseline conditions." This statement is confusing and should be rephrased. Specifically, DOE should indicate whether establishment of baseline conditions is an objective of the RI.

2. **Section 2.4.3, Pages 2-58 through 2-62.** This section presents the basis for relative contamination designation for classification of Fernald Environmental Management Project (FEMP) components. The current RI implications of the two-category classification scheme are not clear. The available data used for this classification scheme indicate that the media-process-component scheme proposed for RI investigations was not used in this initial screening. It appears that components are being screened from further investigation before specific media within specific process areas of the components have been characterized. This is a significant deficiency. DOE should provide specific sampling schemes at appropriate analytical levels to ensure that components are not screened from further characterization and that contaminated media will not be released.

3. **Section 2.4.3, Page 2-61, Table 2.4.** This table and the corresponding text in Section 2.4.3 present the basis for relative contamination designation for the FEMP components.

DOE proposes that media be classified as having "no significant contamination" or "significant contamination" based on average total surface contamination. The use of average total surface contamination implies that components may be classified as having "no significant contamination" even though isolated areas may have maximum surface contamination well above the maximum allowable levels for materials to be released for reuse without radiological restriction. One of dozens of examples where this occurs is in the chemical warehouse (Component 30A). This component is classified as having no significant contamination; however, a maximum surface contamination of 49,200 dpm per 100 cm^2 was reported. The approach may allow release of significantly contaminated materials. EPA recommends that components be classified based on the maximum values for total observed surface contamination. The same comment applies to removable surface contamination.

4. **Section 2.4.3.1, Page 2-62, Lines 24 through 26**. The text states that the Rust Engineering Building had an average total surface contamination value of 12,000 dpm per 100 cm^2 during the 1992 survey. The maximum and minimum total surface contamination values for all components should be provided along with the average values for this discussion and all subsequent discussions.

5. **Section 2.4.3.2, Page 2-63, Lines 4 through 23**. This section discusses radiological survey data for warehouses and storage buildings. As written, it is difficult to determine whether removable or total surface contamination data are being discussed. The discussion should be rewritten for clarity. Also, refer to RI work plan General Comment 3 regarding the terminology used for total surface contamination.

6. **Section 2.4.3.2, Page 2-63, Lines 17 through 19.** The text states that of the three previously listed components, two are classified on the basis of uranium. Actually, five components are previously listed. This discrepancy should be addressed.

7. **Sections 2.4.3.1 through 2.4.3.11, Tables 2.5 through 2.11, Pages 2-62 through 2-71.** The text and corresponding tables indicate that many components have been categorized as having "no significant contamination" even though the classification has been made with limited and incomplete data. For example, of the 14 components characterized as having "no significant contamination in Table 2.6, nine have no data for total (fixed) surface contamination. Of these nine components, six are not currently planned for RI sampling. If the current classification system is to be retained, additional screening data should be collected to support or re-evaluate the conclusions presented in the RI work plan.

8. **Section 2.4.4, Page 2-71, Lines 9 and 10.** The text states that the volume estimates for materials in OU 3 account for soil in existing soil piles. However, Table 2.12 (Page 2-72) does not appear to account for soil in piles as stated. This discrepancy should be addressed.

9. **Section 2.5.1, Pages 2-73 through 2-91.** The work plan should include a discussion of additional removal actions that may have been identified since the submittal of the OU 3 work plan addendum.

10. **Section 2.5.1, Page 2-74, Lines 9 through 11.** The text states that "most of the interim activities are directly supportive of the objectives for continued safe and environmentally protective maintenance of the facility

during the CERCLA remediation process." DOE should discuss which of the interim activities do not meet the objectives and why.

11. **Section 4.2.2.7, Page 4-11, Lines 20 and 21**. The text lists three considerations that have a major influence on the RI sampling design. The second consideration is the assumption that all major areas of radiological contamination in OU 3 have been identified. The term "major areas of radiological contamination" should be defined. Also, as indicated in previous comments, it is unlikely that all areas of radiological contamination have been identified. The level of uncertainty associated with the statement and the potential problems associated with the data gaps should be fully discussed.

12. **Section 4.2.2.7, Page 4-11, Lines 26 through 30**. The text states that regions of components with "expected contamination" will be surveyed to locate areas of contamination. DOE should define the term "expected contamination." Also, review of the SAP reveals that specific details regarding the survey are not provided. The methods used to determine specific sampling locations, density, and frequency should be provided. Details of how screening data will be recorded and reported should also be provided.

13. **Section 4.2.2.7, Page 4-12, Lines 1 through 6**. This section discusses collection of intrusive samples for chemical analysis. It is not clear how specific areas will be targeted for intrusive sampling. The procedures used to determine intrusive sampling locations should be discussed.

14. **Section 4.2.2.7, Page 4-12, Lines 23 through 29**. The text states that 10 percent of the samples collected for

laboratory analysis will be analyzed under analytical support level (ASL) D. It is proposed that this will serve as a quality check on laboratory performance and data validation for the remaining 90 percent of the samples submitted for ASL C analysis. However, DOE will not be able to compare the data generated under ASL D with corresponding ASL C data. Therefore the objectives, particularly those regarding the quality check on laboratory performance, cannot be met. It would be more appropriate to collect split samples for 10 percent of the samples and submit one aliquot each for ASL D and ASL C analyses. This issue should be addressed.

15. **Section 4.3.2, Page 4-23, Table 4.4.** This table provides a conservative list of radiological parameters that will be used for analysis of all intrusive samples. Unlike other FEMP OU RIs, total uranium and total thorium are not proposed as parameters for analysis. The reasons for omitting these parameters should be discussed.

16. **Section 4.3.2, Page 4-24, Lines 3 through 6.** The text states that all swipe samples collected within a component whose contaminant levels exceed by an order of magnitude the DOE surface contamination guidelines will be composited for analysis for individual radionuclides. Any component whose contaminant levels exceed DOE guidelines for unrestricted release of materials should be characterized for individual radionuclides. DOE should provide the rationale for selecting the "one order of magnitude higher" action level. DOE should also combine swipe samples from a single component whose screening analysis indicates the same order of magnitude of contamination for analysis. For example, by compositing swipe samples that exceed the action level by 1 order of magnitude, those that exceed the action level by

1 to 2 orders of magnitude and so on will result in a more focused characterization of contaminant levels.

17. **Section 4.5, Page 4-38, Lines 24 through 27.** The text states that health and safety screening will be conducted as part of the RI field characterization activities. DOE should provide more information regarding these activities. The discussion should specify ASLs, methods and time frames of data reporting, and how new data will be used to modify proposed sampling activities (if applicable).

GENERAL COMMENTS ON THE OU 3 SAP

1. The SAP (Page D.1-1) states that all required sampling and analytical procedures have been or will be incorporated into the SCQ. The SAP (Table D.6-5) indicates that about 150 analytical and corresponding sampling procedures must still be submitted for review and approval. The implications, particularly regarding the schedule, are significant. DOE should provide the schedule under which these additions to the SCQ will be submitted. Also, the work plan should indicate that EPA must approve these sampling and analytical procedures before the field activities can begin, and the impact on the proposed schedule should be discussed.

2. The SAP (Page D.3-16, Lines 23 through 25) states, "All materials in OU 3 will be thoroughly surveyed during remediation. Therefore, actual disposition of materials will not be affected by the assumptions concerning contamination in nonsampled components." This statement serves to clarify much of DOE's RI sampling approach. Unfortunately, this is the only section where this discussion is presented. This discussion should be included where the work plan presents the RI objectives. In addition, DOE should present details of the proposed

surveying and characterization that will be undertaken as part of the remedial action.

3. Neither the work plan, SAP, nor the CSSPs identify the metals, organic compounds, or radionuclides that will be analyzed for in each intrusive sample. This is a major omission. All three of these documents, as applicable, need to be revised to include for each sample (1) the specific analyses to be performed and (2) the rationale for including (and excluding) particular analytes.

4. Sections D.4.2.1 through D.4.3.3 discuss chemicals and radionuclides of interest, of potential interest, known to be present, and that are potentially significant. Table D.4-3 lists potential contaminants of concern, and Table D.4-6 gives the RI analyte list. This is redundant and confusing, particularly considering that the work plan and SAP do not specify what will actually be analyzed for (see General SAP Comment 3). These sections and tables should be revised to more clearly and concisely describe which contaminants will be analyzed during the RI. The rationale for selecting and rejecting various contaminants for analysis should also be presented in the work plan.

5. The SAP should indicate which proposed analytical and screening methods will be used for Protocol 1 sampling. The current discussion simply lists various instruments and analytical methods available. Additionally, DOE should indicate which Protocol 1 analytical and screening methods must still be submitted to EPA for review and approval.

6. Individual CSSPs should have a section detailing the data quality objectives (DQO). This section should provide the required ASL for all proposed analytical methods, including screening. Additionally, the CSSP should include a section

that identifies specific data needs or gaps for each component. This information is required for evaluation of the proposed sampling activities to ensure that RI objectives are met.

7. Many CSSPs are incomplete. For instance, the CSSPs for Component 1B (Section D.9.2.1) and Component 4B (Section D.9.2.2) do not indicate whether sampling will be conducted. All CSSPs should be reviewed for completeness, and missing information should be provided.

8. Many CSSPs summarize radiological data that is not present in the data summary tables (Tables A-4.0 and A-4.1). Conversely, many CSSPs do not discuss data that is presented in the summary tables. These discrepancies should be addressed.

9. Many components are identified in the work plan as having "no significant contamination," although the corresponding CSSPs discuss hot spots with contaminant levels well above the DOE action level guidelines (Component 30A is one of many examples). These discrepancies should be clarified.

10. Section D.4.6.1 discusses the preparation and contents for the field work packages (FWP). It is EPA's understanding that the FWPs will be a stand-alone document that will enable the field technician to complete all sampling activities from on-site arrival through sample delivery to the laboratory. However, the proposed FWP outline lacks specific detail. Specific analytical parameters are not identified. Details regarding quality assurance and quality control (QA/QC) sampling and sample filtration, preservation, packing, shipping, and chain of custody are not addressed. DOE should modify the FWP outline to ensure that the resulting FWPs provide all appropriate information.

SPECIFIC COMMENTS ON THE OU 3 SAMPLING AND ANALYSIS PLAN

1. **Section D.3.1, Page D.3-1, Lines 3 through 5.** The text states that the objective of the OU 3 RI is to collect data needed to support fundamental decisions regarding the management and future disposition of OU 3. However, the work plan (Page 1-4) lists additional RI objectives, including objectives dealing with risk assessment and remedial action alternatives (RAA). The specific objectives of the OU 3 RI should be clearly and consistently reported in the work plan and SAP.

2. **Section D.3.2.2, Page D.3-5, Lines 22 through 24.** The text states that air samples will be collected and analyzed for airborne radioactivity if there is a "significant presence" of radium-226 or thorium-232 in a component. DOE should define the term "significant presence" and should include specific action levels indicating when radon sampling will be performed. Additionally, DOE does not propose air sample collection and analyses for other airborne particulates that may be contaminated. Justification for this omission should be provided.

3. **Section D.3.2.2, Page D.3-6, Lines 5 through 9.** The text discusses sampling of surface water and sediments in ponds and basins within OU 3, but no other information is provided. A thorough discussion of pond and basin sampling and surface water and sediment analysis should be provided. Additionally, these activities should be discussed in terms of their relationship with OU 5 RI activities.

4. **Section D.3.3.1, Page D.3-7, Lines 11 through 13.** The text states that the maximum surface level or depth of contamination represents the entire extent of the medium within the process area for treatment purposes. Although

EPA agrees with this approach, the proposed sampling methods do not ensure that the depth of contamination will be entirely and routinely characterized. It is likely that the initial rounds of cores, chips, or scrapings collected will indicate that contamination remains below the depth of sampling penetration. DOE has not provided contingency plans to address the data gaps that may result. This issue should be addressed.

5. **Section D.3.3.1, Page D.3-7, Lines 30 through 33.** The text states that a single intrusive sample for each class of chemical contaminants will be taken from each medium. It is not clear whether a single intrusive sample will be collected and split for various analyses (for volatile organic compounds [VOC], semivolatile organic compounds [SVOC], metals, and so on) or whether individual intrusive samples will be collected for each class of contaminants. This matter should be clarified, and the rationale should be presented for either approach.

6. **Section D.3.3.3, Page D.3-13, Table D.3-2.** The method detection limits for total beta-gamma are unreasonably high and vague (less than 15,000 dpm per 100 cm^2). The method detection limits should be clearly specified, and a unit capable of expressing much lower detection limits should be used. Additionally, information regarding toxicity characteristic leaching procedure (TCLP) analyses should be added to the table.

7. **Section D.3.4.1, Page D.3-15, Lines 13 through 15.** This section states that components were placed in the "to be sampled" category if average removable contamination was above 1,000 dpm per 100 cm^2 or if average fixed contamination exceeded 5,000 dpm per 100 cm^2. The numbers

represent the maximum allowable contamination levels for release of materials for reuse based on uranium isotopes. The allowable levels for thorium-related contamination are five times lower. DOE acknowledges that various factors, including process knowledge, were sometimes used to classify components as "to be sampled" even though the uranium limits were not exceeded. However, the thorium limit (200 dpm per 100 cm^2 for removable contamination and 1,000 dpm per 100 cm^2 for fixed contamination) should be used for any components known to have handled thorium. These decision-making strategies and action levels should be used for any components known or suspected to be contaminated with thorium.

8. **Section D.3.4.3.4, Page D.3-21, Lines 22 through 26.** The text states that transite samples will be collected from locations with the greatest potential for chemical contamination. DOE should discuss the criteria used to determine which locations have the greatest potential for chemical contamination.

9. **Section D.4.3.4, Pages D.4-20 and D.4-21.** This section states that characterization of physical properties of contaminants or contaminated matrices (particle size, porosity, density, and so on) is required to establish and assess potential remedial actions. However, no further information regarding sampling and analysis for physical properties is provided. These omissions should be addressed.

10. **Section D.5.1.1, Page D.5-2, Lines 1 through 3.** This section indicates that air will be sampled and analyzed for short-lived (radon, thoron, and their daughters) and long-lived radionuclide contamination. This appears to

contradict Sections D.3.2.2 and D.5.1.1.4, which state that only air sampling and analysis for radon will be performed. These discrepancies should be addressed, and the work plan and SAP should be revised to include air sampling and analysis for longer-lived radionuclide particulate contamination (see SAP Specific Comment 2).

11. **Section D.5.1.1, Page D.5-2, Line 4**. This line states that continuous air monitoring will be employed if "significant levels" are observed. The term "significant levels" is vague. The action level for implementing continuous air monitoring should be clearly defined.

12. **Section D.5.1.1.4, Page D.5-4, Lines 15 and 16**. The text states that "where possible continuous air sampling will be used for representativeness." This statement appears to contradict Section D.5.1.1, which states that continuous air sampling will be imposed once action levels are triggered (see SAP Specific Comment 11). This discrepancy should be resolved.

13. **Section D.5.1.1.6, Page D.5-5, Lines 1 through 15**. This section presents the advantages and disadvantages of the two proposed methods for polychlorinated biphenyl (PCB) analyses. For the reasons presented by DOE, EPA recommends that the on-site gas chromatograph (GC) be used for PCB analyses.

14. **Section D.5.1.2.1, Page D.5-6, Lines 25 through 29**. This section indicates that final sampling locations will be selected on the basis of highest beta-gamma activity. It further states that removable alpha and removable beta-gamma measurements will be used to supplement total beta-gamma measurements. The type of radiological surface contamination surveys (fixed, removable, or total) to be

conducted is not clear. Refer to RI work plan General Comment 3 regarding the terminology used for radiological surface contamination. If fixed surface contamination sampling will be performed, the logical sampling procedure would involve "cleaning" the surface of removable contamination with a swipe sample, thereby providing equal numbers of both sample types. Even if the swipe sample is not retained for analysis, the surface should still be cleaned of removable contamination before the fixed contamination readings are taken. This issue needs further clarification, and more detailed sampling procedures should be provided.

15. **Section D.5.1.2.1, Page D.5-7, Lines 6 through 37**. This section describes the procedures that will be used to conduct radiological surveys of major media. However, the discussion does not provide any information regarding how the precise locations of survey points (particularly hot spots) will be accurately identified and recorded. Given the small scale of the existing maps and the large size of many components, it is unlikely that this will be accomplished with the precision required without the use of surveying techniques and equipment. This issue should be addressed.

16. **Section D.5.1.3.2, Page D.5-11, Lines 14 through 16**. This sentence states that the areal extent of PCB contamination exceeding the regulatory limit of 100 micrograms (μg) per 100 cm^2 may be determined through further swipe sampling and analysis at ASL B. Use of ASL B is not appropriate to establish the extent of PCB contamination; GC analysis at ASL C should be used instead. This issue should be addressed.

17. **Section D.5.1.3.3, Page D.5-11, Lines 27 through 30.** The text states that the suite of x-ray fluorescence analytes will be determined at a later time. The work plan and SAP should present the specific analytes proposed. This information should also be included in the CSSPs.

18. **Section D.7.2.3, Page D.7-2, Lines 22 and 23.** These lines state that the FWPs will specify the appropriate number and types of blanks. EPA notes that the frequency of collection of QA samples is not specified in the SCQ. This information should be included in the revised SCQ for review and approval. Also, because most components will require fewer than 10 investigative samples, it will be difficult for reviewers and sample technicians using the FWPs alone to ensure that the appropriate number of QA samples are identified and collected. Both the SAP and SCQ should include all appropriate discussion and tables specifying the required number of QA samples.

19. **Section D.7.2.3, Page D.7-2, Lines 23 through 27.** The text states that one duplicate sample will be taken for each significant matrix to represent the first sample from each group of 20 samples. The collection frequency of other QA samples (blanks and spikes) is not specified. EPA Region 5 quality assurance project plan guidance requires that field blanks, equipment blanks, and duplicate samples be collected at a frequency of 1 for every 10 investigative samples (per matrix) collected. Matrix spike/matrix spike duplicate samples are to be collected for every twentieth sample. The SAP, SCQ, and FWPs should be revised accordingly.

20. **Section D.9.0.2, Page D.9-3, Lines 4 through 8.** The text states that the radiological survey data have been deemed acceptable for RI decision-making. DOE should indicate that this determination has not yet been made by EPA.